

ROADWAY DESIGN GUIDELINES FOR DESIGN-BUILD PROJECTS July 2008

GENERAL

The design shall be in accordance with the *2004 AASHTO A Policy on Geometric Design of Highways and Streets*, *July 2006 NCDOT Roadway Standard Drawings*, *NCDOT 2002 Roadway Design Manual*, *Roadway Design Policy and Procedure Manual*, *July 2006 North Carolina Standard Specifications for Roads and Structures*, and the *AASHTO Roadside Design Guide 2002*.

If the *NCDOT Roadway Design Manual*, the *2004 AASHTO A Policy on Geometric Design of Highways and Streets*, the *July 2006 Roadway Standard Drawings* and / or any other guidelines, standards or policies have desirable and / or minimum values, the Design-Build Team shall use the desirable values unless otherwise noted elsewhere in the RFP. Similarly, in case of conflicting design parameters in the various resources, the proposed design shall adhere to the most conservative values.

If applicable, the project shall follow the NCDOT-FHWA Oversight Agreement. The Department shall provide this agreement. Any changes that affect previous approvals shall be re-submitted by the Design-Build Team for FHWA approval.

The Design-Build Team shall identify the need for any special roadway design details (i.e. any special drainage structures, rock embankment, rock plating, special guardrail, retaining walls, concrete barrier designs, etc.) and shall provide special design drawings. The Project Services Unit may have special details available that can be provided to the Design-Build Team upon request. The Design-Build Team shall refer to the list of details to be used in lieu of standards located at

http://www.ncdot.org/doh/preconstruct/ps/std_draw/default.html

PLAN SUBMITTALS

All plans submitted shall be printed on white bond paper. Plans that are submitted on vellum, photo Mylar, blue prints, etc., are not acceptable. All full size reproducible copies shall be on 22" x 34" sheets with a 3" border on the left end and all half size reproducible copies shall be on 11" x 17" sheets. All cross-sections containing over thirty (30) sheets shall be on 11" x 17" sheets. Cross-sections containing less than thirty sheets will be on 22" x 34" sheets. Plans that do not meet these requirements will not be accepted.

REQUIREMENTS FOR PRELIMINARY ROADWAY PLANS

Prior to submission of the Preliminary Roadway Plans, the Design-Build Team shall submit detailed Design Criteria and Structure Recommendations for review by the Department. Design criteria not in compliance with AASHTO standards should be brought to the Department's attention for evaluation of a design exception prior to incorporation in the design.

The Preliminary Roadway Plans shall incorporate the specific details noted in the Review List for Preliminary Roadway Plans, shown below as Exhibit "A", and include, but not be limited to, the following:

1. Title Sheet
2. Typical Sections defining overall dimensions of the proposed design.
3. Plan and profile sheets with horizontal and vertical design
4. Vertical clearance calculations
5. Sight distance calculations at bridges or other obstructions
6. Capacity Analysis
7. Preliminary Interchange Design including ramp control gore calculations
8. Shear Point Diagram (if applicable)
9. Property Owner Contact Forms (if surveys are part of the contract)
10. Copies of the accepted R.C. Box Culvert and / or Bridge Survey Report(s) if grades are controlled by these reports. The Design-Build Team shall inform the Department if grades are not controlled by these reports.
11. Preliminary slope stake lines
12. Design Exception Checklist (see Roadway Design web-site)
13. Project Coordination Checklist (if project joins another under design)
14. Ground surface profiles and preliminary grade profiles for the mainline and intersecting roads. If project requires a resurfacing grade, this should be submitted along with control point calculations for review. All –Y- Line grades shall have mainline and –Y- Line station, offset and pavement elevation shown at the alignment intersecting point and the mainline edge of pavement.

15. Preliminary cross sections shall be shown for all proposed construction. The cross sections shall contain grid lines at 1- foot intervals with the station and elevation of the existing ground shown below the section at the centerline and the finished grade elevation shown above the template. A bar scale shall be shown on all sheets.
16. All existing utilities shall be labeled with type, size and invert elevation.
17. All existing and proposed guardrail.

Preliminary Roadway Plans will not be accepted until all of the above requirements are met.

REQUIREMENTS FOR RIGHT OF WAY / 60% ROADWAY PLANS

Prior to submission of the Right of Way / 60% Roadway Plans, 100% Hydraulic Design must be completed and accepted.

The Right of Way / 60% Roadway Plans shall incorporate the specific details noted in the Review List for Right of Way / 60% Roadway Plans, shown below as Exhibit “B”, and include, but not be limited to, the following:

1. Proposed design for the roadway, intersections and interchanges.
2. Existing ground surface profiles and project grade profiles for the mainline and intersecting roads (including resurfacing grades) and interchanges.
3. Proposed guardrail design
4. The location and size of all drainage structures and systems required for complete drainage of the project
5. Delineation of wetlands
6. The location of slope stake limits and construction limits including berm or lateral ditches and channel changes
7. Details for all drainage ditches
8. All property lines within the right of way limits and immediately adjacent to the proposed right of way along with all bearings, curve data, distances and corners of such property lines obtained from field survey notes and deed descriptions. Property lines shall be tied to the proposed centerlines for construction, proposed alignments for the mainline and –Y- Lines. All affected parcels shall show property owner names.

9. The existing right of way lines of public roads within the project limits.
10. Proposed right of way and easements shall be appropriately labeled on the plans. The Design-Build Team shall consult with the Alternative Delivery Unit for proper methodology and consistency with adjacent projects. All right of way and easement points will be flagged with an offset station and distance. If the project is Metric, the distances shall be labeled in both English and Metric units.
11. All typical sections required for construction of the project with dimensions that affect the right of way shown.
12. Cross sections for all proposed construction. If available, this includes showing temporary slopes for traffic control and retaining wall locations. The cross sections shall contain grid lines at 1- foot intervals with the station and elevation of the existing ground shown below the section at the centerline and the finished grade elevation shown above the template.
13. Wall envelopes for all retaining walls
14. The Design-Build Team shall identify land-locked properties and provide the location of any proposed service roads (if applicable)
15. Any required detour construction shall be included in the Roadway Plans in the 2 sheet series. Information required for detour construction include as a minimum, horizontal and vertical alignments, temporary and permanent drainage designs, temporary and permanent easement / right of way.
16. Parcel numbers for all properties from which right of way or easements will be acquired.
17. A tabulation showing property owner name, parcel number, total area of tract, area within right of way, area of residue on each side of the right of way, and area of easements.
18. Project Coordination Checklist, if applicable

Plans for this submittal will not be accepted until all the above requirements are met.

When revisions are made to the Right of Way Plans, the Design-Build Team shall place a revision note in the upper left-hand corner of the sheet. All Right of Way Revision notes are to be removed at the Final Roadway Plan Submittal.

REQUIREMENTS FOR FINAL ROADWAY PLANS

The Final Roadway Plans shall incorporate the specific details noted in the Review List for Final Roadway Plans, shown below as Exhibit “C”, and include, but not be limited to, the following:

1. List of General Notes
2. List of Standard Details
3. Special Details
4. Special Provisions
5. Index of Sheets
6. Final Plans Checklist
7. Project Coordination Checklist, if applicable

Plans for this submittal will not be accepted until all the above requirements are met.

REQUIREMENTS FOR INTERCHANGES

- A. It is advisable to submit preliminary interchange design concepts as soon as possible for review by the Department prior to the Preliminary Roadway Plan submittal. These concepts should include the following information:
 1. Preliminary grades for ramps
 2. Ramp grade control calculations and sketches in gore areas
(See the example in the Design Manual)
 3. Vertical clearance calculations and critical points noted
 4. Cross sections through the gore area extending an additional 300 feet beyond the gore area
 5. Superelevation shall be shown on the cross sections and plan view
 6. Critical sight distance calculations
 7. Capacity analysis and storage recommendations

8. All other related factors that could influence the vertical and horizontal geometry of the interchange
- B. Once the mainline and –Y- Line grades are accepted all controls and calculations can be finalized.
 - C. Interchange detail sheets shall be prepared at a scale of 1" = 50' on 34" x 68" white bond sheets. Slight variation from these dimensions may be allowable if approved by the Department. These sheets shall meet the same requirements for content as specified for plan sheets. Ground profiles and proposed grade lines for ramps shall be prepared on separate sheets. Ramp stations shall begin at the –L- line and run toward the –Y- Line. The direction of stationing on ramp profiles shall match the plan sheet.
 - D. For complex interchanges, a detail of the interchange shall be prepared on a separate sheet that shows finished contours at 2' intervals between the mainline and ramps. These contour sheets are generally not required for simple diamond type interchanges. A reduction of the interchange sheet (22" x 34") shall be part of the Final Roadway Plan submittal.
 - E. A cross section layout showing numbered shear points and break points shall be prepared for obtaining field data for earthwork. It is not necessary to use shear sections in diamond interchanges and other ramps that do not depart radically from the alignment, unless requested by the Design-Build Staff.
 - F. Slopes inside the gore areas 200' - 300' ± from nose, should be 6:1 or flatter. Slopes inside the interchange area should be a maximum of 4:1. Topographic conditions, wetlands, property values, and earthwork requirements may dictate steeper or flatter slopes. Interior slopes steeper than 4:1 will require written justification and approval by the Department. The entire interchange shall be graded to provide adequate sight distances.

REVIEW LIST FOR PRELIMINARY ROADWAY PLANS
EXHIBIT "A"

TITLE SHEET

- _____ (1) LOCATION OF PROJECT IS COMPLETE AND ACCURATE
- _____ (2) COUNTY IS SHOWN
- _____ (3) TYPE OF WORK IS COMPLETE AND ACCURATE
- _____ (4) GRAPHIC SCALES ARE SHOWN FOR PLAN AND PROFILE SHEETS
- _____ (5) DESIGN DATA IS SHOWN
- _____ (6) VICINITY MAP INCLUDES THE FOLLOWING
 - _____ (A) CITY AND CITY LIMITS
 - _____ (B) INTERSTATE, U.S. AND STATE ROUTES
 - _____ (C) NORTH ARROW
 - _____ (D) BEGINNING AND END OF PROJECT
 - _____ (E) TITLE BLOCK
 - _____ (F) OFFSITE DETOURS
- _____ (7) PROJECT LAYOUT ON NUMBERED SUPERIMPOSED SHEETS INCLUDES THE FOLLOWING:
 - _____ (A) PROJECT ALIGNMENT FOR ALL PROPOSED CONSTRUCTION, (-L- LINES, -Y- LINES, SERVICE ROADS, DETOURS, ETC.)
 - _____ (B) EXISTING ROADS AND STREETS AFFECTED BY CONSTRUCTION, BUT NOT A PART OF THE PROJECT
 - _____ (C) ROUTE NUMBERS, SURVEY LINE NUMBERS, STREET NAMES, ETC.
 - _____ (D) EQUALITIES SHOWN ON SURVEY LINE USED FOR LENGTH OF PROJECT (CHECK WITH EQUALITIES SHOWN ON PLAN SHEETS)
 - _____ (E) PROPOSED BRIDGES AND CULVERTS 20' / 6 m AND OVER WITH BEGINNING AND ENDING STATIONS
 - _____ (F) STREAMS AND RIVERS
 - _____ (G) RAILROADS
 - _____ (H) CITY LIMITS
 - _____ (I) STATE AND COUNTY LIMITS
 - _____ (J) BEGINNING AND ENDING STATIONS FOR EACH PROJECT
 - _____ (K) BEGINNING AND ENDING STATIONS FOR CONSTRUCTION OUTSIDE PROJECT LIMITS
 - _____ (L) DESTINATION POINTS AT BEGINNING AND ENDING OF PROJECT
 - _____ (M) NORTH ARROW
- _____ (8) PROJECT NUMBER INFORMATION INCLUDES THE FOLLOWING:
 - _____ (A) T.I.P. NUMBER ON LEFT END OF SHEET (CONTRACT NUMBER ON LEFT END OF SHEET)

- _____ (B) P.E. F.A. PROJECT NUMBER IN PROJECT IDENTIFICATION BLOCK (TOP RIGHT CORNER)
- _____ (C) P.E. WBS ELEMENT IN PROJECT IDENTIFICATION BLOCK (TOP RIGHT CORNER)
- _____ (9) LENGTH OF PROJECT CORRECT (LENGTH SHOWN FOR ROADWAY, STRUCTURE AND TOTAL PROJECT)
- _____ (10) SHOW PLANS PREPARED BY: _____
- _____ (11) R/W AND LETTING DATES (MONTH, DATE AND YEAR) (RIGHT OF WAY DATE SHOWN ON TITLE SHEET IS DATE SUBMITTED TO RIGHT OF WAY BRANCH IF NCDOT IS ACQUIRING THE RIGHT OF WAY OR AWARD OF CONTRACT IF THE DESIGN-BUILD TEAM IS ACQUIRING THE RIGHT OF WAY)
- _____ (12) AREAS NOT PART OF PROJECT NOTED
- _____ (13) CLEARING METHOD NOTE
- _____ (14) CHECK FOR DESIGN EXCEPTION NEEDS
- _____ (15) "PRELIMINARY PLANS", SUBMITTAL NUMBER AND SUBMITTAL DATE CLEARLY NOTED

TYPICAL SECTIONS

- _____ (1) PAVEMENT SCHEDULE CORRESPONDS WITH PAVEMENT DESIGN
- _____ (2) PAVEMENT COMPOSITIONS LABELED TO CORRESPOND WITH PAVEMENT SCHEDULE
- _____ (3) DIMENSIONS SHOWN ON PAVEMENT, SUBGRADES, STABILIZATION, SHOULDERS, DITCHES, SLOPES, CENTERLINE TO CENTERLINE, MEDIANS, SIDEWALKS, UTILITY STRIPS, CURB & GUTTER, ETC.
- _____ (4) SLOPES SHOWN ON PAVEMENT, FLEXIBLE PAVEMENT EDGE, SHOULDERS, SUBGRADE, DITCHES, HINGE POINT GRADING, CUTS AND FILLS
- _____ (5) STATION TO STATION SHOWN WITH CORRECT LINE REFERENCE
- _____ (6) STATIONS ARE BROKEN FOR BRIDGES AND EQUALITIES
- _____ (7) GRADING LIMIT LINES SHOWN
- _____ (8) GRADE POINT SHOWN ON EACH TYPICAL SECTION
- _____ (9) INFORMATION RELATED TO FUTURE CONSTRUCTION SHOWN
- _____ (10) VARIABLE LIMITS SHOWN
- _____ (11) NECESSARY NOTES OF EXPLANATION SHOWN

PLAN SHEETS

- _____ (1) BEGINNING AND ENDING STATIONS ARE SHOWN ON FIRST AND LAST PLAN SHEET TO AGREE WITH TITLE SHEET AND TYPICAL SECTIONS
- _____ (2) EXISTING PAVEMENT WIDTH AND TYPE IS SHOWN

- _____ (3) GRADE LINES AND DESIGN CORRECT
- _____ (4) THE FOLLOWING ARE SHOWN ON EACH PLAN AND / OR PROFILE SHEET:
 - _____ (A) NORTH ARROW
 - _____ (B) BEARINGS
 - _____ (C) BENCH MARKS
 - _____ (D) CURVE DATA WITH SUPERELEVATION AND RUNOFF, INCLUDING THE DESIGN SPEED FOR ALL PROPOSED VERTICAL AND HORIZONTAL CURVES
 - _____ (E) CONSTRUCTION LIMITS
 - _____ (F) PROPERTY OWNERS AND PROPERTY LINES
 - _____ (G) ALL EXISTING UTILITIES
 - _____ (H) STREETS, ROADS AND DRIVEWAYS
 - _____ (I) DETOURS
 - _____ (J) DISPOSITION OF OLD ROADS IF PROJECT IS A RELOCATION
 - _____ (K) PROPOSED PAVEMENT AND RIGHT-OF-WAY WIDTHS AT THE BEGINNING AND END OF EACH SHEET
 - _____ (L) -Y- LINES WITH BEGINNING AND ENDING CONSTRUCTION STATIONS AND STATION TIES WITH MAIN LINE
 - _____ (M) TRAFFIC DATA FOR INTERSECTIONS
 - _____ (N) LIMITS OF PAVED SHOULDERS AT INTERSECTIONS
 - _____ (O) NOTES WHERE SIGHT DISTANCE GRADING IS REQUIRED AT INTERSECTIONS
 - _____ (P) CROSS REFERENCE NOTES CORRECT
 - _____ (Q) SYMBOL DENOTING PAVEMENT REMOVAL LOCATIONS
 - _____ (R) ENSURE BASELINE DATA IS SHOWN AS FOLLOWS: POINTSYMBOL, POINT NUMBER, STATION AND OFFSET FROM DESIGN ALIGNMENT

INTERCHANGE SHEETS

- _____ (1) INTERCHANGE SHEETS PROPERLY MATCHED WITH ADJACENT PLAN SHEET WITH NO OVERLAPPING COVERAGE, IF POSSIBLE
- _____ (2) STRUCTURES CHECKED FOR VERTICAL AND HORIZONTAL CLEARANCES TO ASSURE THAT TIE POINTS AND CENTERLINE GRADES ARE CORRECT
- _____ (3) THE FOLLOWING INFORMATION CORRECTLY SHOWN ON THE INTERCHANGE DETAILS AND PROFILES:
 - _____ (A) TRAFFIC DATA
 - _____ (B) BAR SCALE
 - _____ (C) ADDITIONAL ITEMS AS LISTED UNDER PLANS SHEETS
- _____ (4) CROSS-SECTION LAYOUT DETAIL (NOT ALWAYS REQUIRED FOR DIAMOND INTERCHANGE)

- _____ (5) SUFFICIENT SIGHT DISTANCE PROVIDED AT RAMP
TERMINALS AND STRUCTURES

CROSS-SECTIONS

- _____ (1) GROUND LINE, STATIONS AND EXISTING CENTERLINE
ELEVATIONS
- _____ (2) TEMPLATES SHOWING CUT AND FILL SLOPES, SLOPE
TRANSITIONS, GUARDRAIL WIDENING, ETC.
- _____ (3) GEOLOGY REPORT REVIEWED TO ASSURE CONFORMITY WITH
PLANS
- _____ (4) CROSS-SECTIONS CHECK TO ASSURE ADEQUATE SIGHT
DISTANCES
- _____ (5) SCALE SHOWN ON EACH SHEET
- _____ (6) NOTE ON FIRST CROSS SECTION: "PRELIMINARY PLANS DO
NOT USE FOR CONSTRUCTION" AND "DO NOT USE FOR RIGHT
OF WAY ACQUISITION"

GUARDRAIL DESIGN

- _____ (1) GUARDRAIL SHOWN FOR BRIDGE PIERS, CULVERTS, LARGE
PIPE, SIGN SUPPORTS AND OTHER FIXED OBJECTS
- _____ (2) GUARDRAIL SHOWN FOR PONDS, RIVERS AND OTHER WATER
RELATED HAZARDS
- _____ (3) INVESTIGATE "FALSE CUTS"
- _____ (4) INVESTIGATE POSSIBLY FLATTENING SLOPES TO REDUCE
GUARDRAIL

GENERAL

- _____ (1) T.I.P. NUMBER IS SHOWN ON ALL SHEETS
- _____ (2) PLANS ARE STAMPED "PRELIMINARY PLANS DO NOT USE FOR
CONSTRUCTION" AND "DO NOT USE FOR RIGHT OF WAY
ACQUISITION"

REVIEW LIST FOR RIGHT OF WAY / 60% ROADWAY PLANS

EXHIBIT “B”

TITLE SHEET

- _____ (1) CONTROL OF ACCESS NOTE SHOWN ON PLANS, IF APPLICABLE
- _____ (2) METHOD OF CLEARING NOTE
- _____ (3) PE, RIGHT OF WAY AND UTILITY F.A. PROJECT NUMBERS IN PROJECT IDENTIFICATION BLOCK (TOP RIGHT CORNER)
- _____ (4) P.E., RIGHT OF WAY AND UTILITY WBS ELEMENT IN PROJECT IDENTIFICATION BLOCK (TOP RIGHT CORNER)
- _____ (5) RIGHT OF WAY AND LET DATE SHOWN ON TITLE SHEET (RIGHT OF WAY DATE IS DATE SUBMITTED TO RIGHT OF WAY BRANCH IF NCDOT IS ACQUIRING THE RIGHT OF WAY OR AWARD OF CONTRACT IF THE DESIGN-BUILD TEAM IS ACQUIRING THE RIGHT OF WAY)
- _____ (6) NOTE SPECIFYING MUNICIPAL BOUNDARIES FOR PROJECT
- _____ (7) CONTRACT NUMBER ON LEFT END OF SHEET
- _____ (8) “RIGHT OF WAY / 60% PLANS,” SUBMITTAL NUMBER AND SUBMITTAL DATE CLEARLY NOTED

TYPICAL SECTIONS

- _____ (1) DIMENSIONS THAT WOULD AFFECT THE RIGHT OF WAY ARE SHOWN

PLAN SHEETS AND PROFILE SHEETS

- _____ (1) RIGHT OF WAY, EASEMENTS AND CONTROL OF ACCESS BREAKS ARE SHOWN BY STATION AND OFFSET
- _____ (2) DETOURS SHOWN WITH REQUIRED DRAINAGE, RIGHT OF WAY AND EASEMENTS
- _____ (3) SERVICE ROADS SHOWN
- _____ (4) DISPOSITION OF OLD ROAD IS SHOWN IN AREAS WHERE A RELOCATION IS NECESSARY
- _____ (5) CONSTRUCTION LIMITS
- _____ (6) DRAINAGE SYSTEMS, BERM DITCHES AND LATERAL DITCHES, INCLUDING DIRECTIONAL ARROWS FOR THE WATER FLOW IN ALL DRAINAGE PIPES
- _____ (7) FENCING LIMITS SHOWN AND TYPE OF FENCE SHOWN
- _____ (8) TEMPORARY EROSION CONTROL MEASURES SHOWN THAT AFFECT RIGHT OF WAY OR EASEMENTS
- _____ (9) PROPERTY OWNERS, PROPERTY LINES AND PARCEL NUMBERS CHECKED
- _____ (10) SLOPE STAKE LINES SHOWN

- _____ (11) RIGHT OF WAY, EASEMENT AND CONTROL OF ACCESS BREAKS (MINIMUM 60-FOOT WIDTH REQUIRED) ARE SHOWN BY STATION AND OFFSET DISTANCE
- _____ (12) ALL AREAS THAT ARE TO REMAIN UNDISTURBED WITHIN THE RIGHT OF WAY ARE CLEARLY MARKED
- _____ (13) HYDRAULIC DATA (DRAINAGE AREA, FREQUENCY, ETC.)

CROSS-SECTIONS

- _____ (1) TEMPLATES SHOW ALL CONSTRUCTION LIMITS AFFECTING RIGHT OF WAY AND EASEMENTS
- _____ (2) TEMPLATES SHOW CUT AND FILL SLOPES, SLOE TRANSITIONS, GARDRAIL WIDENING, DITCHES, CHANNEL CHANGES, ETC.

GENERAL

- _____ (1) CULVERT AND STRUCTURE LOCATIONS HAVE BEEN REVIEWED TO ASSURE ADEQUATE RIGHT OF WAY AND / OR EASEMENT IS PROVIDED FOR ALL STRUCTURE DESIGNS
- _____ (2) ADEQUATE CONSTRUCTION AREAS ARE AVAILABLE FOR DRAINAGE AND EROSION CONTROL MEASURES
- _____ (3) ADDITIONAL RIGHT OF WAY REQUIREMENTS TO ACCOMMODATE NOISE ABATEMENT MEASURES HAVE BEEN INVESTIGATED
- _____ (4) CONTROL OF ACCESS HAS BEEN ESTABLISHED AND PROPERTY ACCESS HAS BEEN PROVIDED BY SERVICE ROADS AND / OR ACCESS POINTS WHEN NECESSARY AND WHERE INFORMATION IS AVAILABLE
- _____ (5) TAX MAPS, DEED DESCRIPTIONS, PLATS, STRIP MAPS, PHOTO MYLAR STRIP MAPS, DATA APPRAISAL SHEETS, AND OTHER RELATED RIGHT OF WAY DATA FURNISHED TO THE RIGHT OF WAY BRANCH UNDER SEPARATE COVER WITH PLANS
- _____ (6) REMOVE "DO NOT USE FOR RIGHT OF WAY ACQUISITION" NOTE FROM ALL SHEETS
- _____ (7) PLACE "SURVEY CONTROL SHEETS" IN THE 1 SERIES OF SHEETS AFTER THE "CONVENTIONAL SYMBOLS" SHEET.
- _____ (8) PLACE "CENTERLINE COORDINATE LIST" IN NO. 1 SERIES SHEETS AFTER "SURVEY CONTROL SHEETS" (APPLICABLE TO NEW LOCATION PROJECTS).

REVIEW LIST FOR FINAL ROADWAY PLANS
EXHIBIT “C”

TITLE SHEET

- _____ (1) LOCATION OF PROJECT IS COMPLETE AND ACCURATE
- _____ (2) COUNTY IS SHOWN
- _____ (3) TYPE OF WORK INCLUDES ALL ITEMS SHOWN ON CURRENT TENTATIVE LETTING LIST
- _____ (4) GRAPHIC SCALES ARE SHOWN FOR PLAN AND PROFILE SHEETS
- _____ (5) DESIGN DATA IS SHOWN
- _____ (6) CONTROL OF ACCESS NOTE SHOWN
- _____ (7) SHOW ANY ADDITIONAL “CONVENTIONAL SYMBOLS” ON SHEET 1B
- _____ (8) VICINITY MAP INCLUDES THE FOLLOWING:
 - _____ (A) CITY AND CITY LIMITS
 - _____ (B) INTERSTATE, U.S. AND STATE ROUTES
 - _____ (C) NORTH ARROW
 - _____ (D) BEGINNING AND END OF PROJECT
 - _____ (E) TITLE BLOCK
 - _____ (F) OFFSITE DETOURS
- _____ (9) PROJECT LAYOUT ON NUMBERED SUPERIMPOSED SHEETS INCLUDES THE FOLLOWING:
 - _____ (A) PROJECT ALIGNMENT FOR ALL PROPOSED CONSTRUCTION, (-L- LINES, -Y- LINES, SERVICE ROADS, DETOURS, ETC)
 - _____ (B) EXISTING ROADS AND STREETS AFFECTED BY CONSTRUCTION BUT NOT A PART OF THE PROJECT
 - _____ (C) ROUTE NUMBERS, SURVEY LINE NUMBERS, STREET NAMES, ETC.
 - _____ (D) SYMBOLS FOR PROPOSED BRIDGES AND CULVERTS 20' / 6 m AND OVER WITH BEGINNING AND ENDING STATIONS
 - _____ (E) STREAMS AND RIVERS
 - _____ (F) RAILROADS
 - _____ (G) CITY LIMITS
 - _____ (H) STATE AND COUNTY LIMITS
 - _____ (I) BEGINNING AND ENDING STATIONS FOR EACH PROJECT
 - _____ (J) BEGINNING AND ENDING STATIONS FOR CONSTRUCTION OUTSIDE PROJECT LIMITS
 - _____ (K) DESTINATION POINTS AT BEGINNING AND ENDING OF PROJECT
 - _____ (L) NORTH ARROW

- (10) PROJECT NUMBER INFORMATION INCLUDES THE FOLLOWING:
 - _____ (A) PROJECT CONTRACT NUMBER AND T.I.P. NUMBER ON LEFT END OF SHEET
 - _____ (B) P.E., R/W, UTILITY AND CONSTRUCTION F.A. PROJECT NUMBERS IN PROJECT IDENTIFICATION BLOCK (TOP RIGHT CORNER)
 - _____ (C) P.E., R/W, UTILITY AND CONSTRUCTION WBS ELEMENTS IN PROJECT IDENTIFICATION BLOCK (TOP RIGHT CORNER)
- _____ (11) LENGTH OF PROJECT CORRECT (LENGTH SHOWN FOR ROADWAY, STRUCTURE AND TOTAL PROJECT)
- _____ (12) SHOWN PLANS PREPARED BY: _____
- _____ (13) MONTH, DAY AND YEAR OF R/W AND LETTING SHOWN
- _____ (14) AREAS NOT PART OF PROJECT NOTED
- _____ (15) REMOVE CLEARING METHOD NOTE
- _____ (16) REMOVE NOTE FOR MUNICIPAL BOUNDARIES
- _____ (17) "FINAL PLANS", SUBMITTAL NUMBER AND SUBMITTAL DATE CLEARLY NOTED

INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARDS

- _____ (1) INDEX OF SHEETS, GENERAL NOTES AND LIST OF STANDARDS ARE SHOWN ON SHEET 1-A

TYPICAL SECTIONS

- _____ (1) PAVEMENT SCHEDULE CORRESPONDS WITH PAVEMENT DESIGN
- _____ (2) PAVEMENT COMPOSITIONS LABELED TO CORRESPOND WITH PAVEMENT SCHEDULE
- _____ (3) DIMENSIONS SHOWN ON PAVEMENT, SUBGRADES, STABILIZATION, SHOULDERS, DITCHES, SLOPES, CENTERLINE TO CENTERLINE, MEDIANS, SIDEWALKS, UTILITY STRIPS, CURB & GUTTER, ETC.
- _____ (4) SLOPES SHOWN ON PAVEMENT, FLEXIBLE PAVEMENT EDGE, SHOULDERS, SUBGRADE, DITCHES, HINGE POINT GRADING, CUTS AND FILLS
- _____ (5) STATION TO STATION SHOWN WITH CORRECT LINE REFERENCE
- _____ (6) STATIONS ARE BROKEN FOR BRIDGES AND EQUALITIES
- _____ (7) GRADING LIMIT LINES SHOWN
- _____ (8) GRADE POINT SHOWN ON EACH TYPICAL SECTION
- _____ (9) INFORMATION RELATED TO FUTURE CONSTRUCTION SHOWN
- _____ (10) VARIABLE LIMITS SHOWN
- _____ (11) NECESSARY NOTES OF EXPLANATION SHOWN

- _____ (12) TYPICAL SECTIONS INCLUDED FOR ALL TEMPORARY PAVEMENT DESIGNS

DETAILS (WHERE APPLICABLE)

- _____ (1) INTERSECTIONS AND ISLANDS WITH DETAILS
- _____ (2) TEMPORARY DETOURS
- _____ (3) RIP RAP NOT SHOWN BY STANDARDS
- _____ (4) SPECIAL PAVED DITCHES OTHER THAN ON STANDARDS
- _____ (5) FUNNEL DRAIN INSTALLATION (SPECIAL INSTALLATION, NOT STD.)
- _____ (6) BENCH CUT SLOPES
- _____ (7) UNDERCUT EXCAVATION
- _____ (8) PRE-SPLITTING OF ROCK CUTS
- _____ (9) SPECIAL DRAINAGE STRUCTURE OR ENDWALLS
- _____ (10) SPECIAL DITCHES
- _____ (11) GUARDRAIL NOT COVERED BY STANDARDS
- _____ (12) ASPHALT WEARING SURFACE ON CORED SLAB BRIDGES
- _____ (13) TEMPORARY SHORING

PLAN SHEETS

- _____ (1) BEGINNING AND ENDING STATIONS ARE SHOWN ON FIRST AND LAST PLAN SHEET TO AGREE WITH TITLE SHEET AND TYPICAL SECTIONS
- _____ (2) EXISTING PAVEMENT WIDTH AND TYPE IS SHOWN
- _____ (3) GRADE LINES AND DESIGN CORRECT
- _____ (4) THE FOLLOWING ARE SHOWN ON EACH PLAN AND / OR PROFILE SHEET:
 - _____ (A) NORTH ARROW
 - _____ (B) BEARINGS
 - _____ (C) BENCH MARKS
 - _____ (D) CURVE DATA WITH SUPERELEVATION AND RUNOFF INCLUDING THE DESIGN SPEED FOR ALL PROPOSED VERTICAL AND HORIZONTAL CURVES
 - _____ (E) CONSTRUCTION LIMITS, BERM DITCHES AND LATERAL DITCHES
 - _____ (F) PROPERTY OWNERS, PROPERTY LINES AND PARCEL NUMBERS
 - _____ (G) R/W, EASEMENT, CONTROL OF ACCESS BREAKS (MINIMUM 60-FOOT WIDTH) BY STATION AND OFFSET DISTANCE
 - _____ (H) AREAS TO REMAIN UNDISTURBED WITHIN THE RIGHT-OF-WAY ARE CLEARLY MARKED
 - _____ (I) FENCE AND TYPE
 - _____ (J) STREETS, ROADS AND DRIVEWAYS

- _____ (K) DETOURS
- _____ (L) DISPOSITION OF OLD ROADS IF PROJECT IS A
RELOCATION
- _____ (M) DIMENSIONS OF PAVEMENT AND SHOULDERS IN
RELATION TO PROPOSED BRIDGE WIDTH (SKETCH)
- _____ (N) PROPOSED PAVEMENT AND RIGHT-OF-WAY WIDTHS AT
THE BEGINNING AND END OF EACH SHEET
- _____ (O) SHOW LANE LINES AT INTERSECTIONS, TAPERS,
AUXILIARY LANES, ETC.
- _____ (P) -Y- LINES WITH BEGINNING AND ENDING
CONSTRUCTION STATIONS AND STATION TIES WITH
MAIN LINE
- _____ (Q) TRAFFIC DATA FOR INTERSECTIONS
- _____ (R) LIMITS OF PAVED SHOULDERS AT INTERSECTIONS
- _____ (S) NOTES WHERE SIGHT DISTANCE GRADING IS REQUIRED
AT INTERSECTIONS
- _____ (T) BORROW AND / OR WASTE AREAS
- _____ (U) REMOVAL OF EXISTING PIPES
- _____ (V) PIPES TO BE PLUGGED
- _____ (W) CROSS REFERENCE NOTES CORRECT
- _____ (X) SYMBOL DENOTING PAVEMENT REMOVAL LOCATIONS
- _____ (Y) BEGINNING AND ENDING STATIONS FOR BRIDGES AND
CULVERTS
- _____ (Z) UNDERCUT EXCAVATION ON PROFILE
- _____ (AA) STRUCTURAL SHEET NUMBERS
- _____ (BB) HYDRAULIC DATA (DRAINAGE AREA, FREQUENCY,
ETC.)
- _____ (CC) QUANTITY OF RIP RAP AT EACH LOCATION
- _____ (DD) QUANTITY OF DRAINAGE DITCH EXCAVATION AT EACH
LOCATION
- _____ (EE) QUANTITY OF FILTER FABRIC FOR DRAINAGE AT EACH
LOCATION
- _____ (FF) LAYOUT OF SYMBOLS FOR TYPES OF CONCRETE
PAVEMENT (THROUGH LANES, RAMPS AND
MISCELLANEOUS)
- _____ (GG) DRAINAGE SYSTEMS, BERM DITCHES AND LATERAL
DITCHES, INCLUDING DIRECTIONAL ALLOWS FOR THE
WATER FLOW IN ALL DRAINAGE PIPES
- _____ (HH) DATUM DESCRIPTIONS (NOT APPLICABLE TO PROJECTS
WITH SURVEY CONTROL SHEETS)
- _____ (II) REMOVE BASELINE AND BASELINE STATIONS
- _____ (JJ) ENSURE BASELINE DATA IS SHOWN AS FOLLOWS:
POINT SYMBOL, POINT NUMBER, STATION AND OFFSET
FROM DESIGN ALIGNMENT

INTERCHANGE SHEETS

- _____ (1) INTERCHANGE SHEETS PROPERLY MATCHED WITH ADJACENT PLAN SHEET WITH NO OVERLAPPING COVERAGE, IF POSSIBLE
- _____ (2) STRUCTURES CHECKED FOR VERTICAL AND HORIZONTAL CLEARANCES TO ASSURE THAT TIE POINTS AND CENTERLINE GRADES ARE CORRECT
- _____ (3) THE FOLLOWING INFORMATION SHOWN ON THE INTERCHANGE DETAILS AND PROFILES:
 - _____ (A) TRAFFIC DATA
 - _____ (B) BAR SCALE
 - _____ (C) ADDITIONAL ITEMS AS LISTED UNDER PLANS SHEETS
- _____ (4) CONTOUR GRADING DETAIL SHOWN, IF REQUESTED BY THE DIVISION
- _____ (5) CROSS-SECTION LAYOUT DETAIL (NOT ALWAYS REQUIRED FOR DIAMOND INTERCHANGE)

INTERSECTION SHEETS

THE INFORMATION SHOWN ON THE INTERSECTION DETAILS SHALL BE RESTRICTED TO DESIGN DATA ONLY. THE FOLLOWING SHALL BE SHOWN:

- _____ (1) SHOW INFORMATION FOR CONSTRUCTING THREE CENTERED CURVES IF NOT SHOWN IN THE DESIGN MANUAL
- _____ (2) ISLAND DETAILS
- _____ (3) LEGEND FOR ISLANDS, SIDEWALKS, WHEEL CHAIR RAMPS,
- _____ (4) ALIGNMENT
- _____ (5) LANE MARKINGS
- _____ (6) BAR SCALE
- _____ (7) PROPOSED EDGES OF PAVEMENT
- _____ (8) NORTH ARROWS
- _____ (9) SUPERELEVATION RATES
- _____ (10) PAVED SHOULDER WIDTHS AT GUARDRAIL LOCATIONS AND TRANSITIONS
- _____ (11) SUFFICIENT DIMENSIONS AND TIE POINTS FOR FIELD LOCATION AND CONSTRUCTION

CROSS-SECTIONS

- _____ (1) GROUND LINE, STATIONS AND EXISTING CENTERLINE ELEVATIONS SHOWN
- _____ (2) TEMPLATES SHOWING CUT AND FILL SLOPES, SLOPE TRANSITIONS, GUARDRAIL WIDENING, DITCHES, CHANNEL CHANGES, ETC.
- _____ (3) GEOLOGY REPORT REVIEWED TO ASSURE CONFORMITY WITH PLANS

- _____ (4) UNDERCUT EXCAVATION SYMBOL IS SHOWN
- _____ (5) PRE-SPLITTING OF ROCK CUT SLOPES SHOWN AND LABELED
- _____ (6) CROSS-SECTIONS CHECK TO ASSURE ADEQUATE SIGHT DISTANCES AT BRIDGES, RAMP TERMINALS, INTERSECTIONS AND MAJOR ENTRANCES WITH LARGE TRAFFIC VOLUMES
- _____ (7) SCALE SHOWN ON EACH SHEET
- _____ (8) LABEL CUT AND FILL SLOPES
- _____ (9) EARTHWORK COMPUTATIONS

GUARDRAIL DESIGN

- _____ (1) GUARDRAIL SHOWN FOR BRIDGE PIERS, CULVERTS, LARGE PIPE, SIGN SUPPORTS AND OTHER FIXED OBJECTS
- _____ (2) GUARDRAIL SHOWN FOR PONDS, RIVERS AND OTHER WATER RELATED HAZARDS
- _____ (3) GUARDRAIL SHOWN ON PLANS
- _____ (4) GUARDRAIL SHOWN ON THE GUARDRAIL SUMMARY SHEET
- _____ (5) SPECIAL DETAILS SHOWN AS REQUIRED
- _____ (6) GUARDRAIL IS IN ACCORDANCE TO STANDARDS

GENERAL

- _____ (1) NOTE TYPE OF PIPE TO BE USED FOR CROSS DRAINS UNDER HIGH TYPE PAVEMENT AND FOR SIDE DRAINS OVER 24 INCHES / 600 MM
- _____ (2) REMOVE "PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION" NOTE FROM ALL SHEETS
- _____ (3) DESIGN EXCEPTION REQUESTED AND APPROVED
- _____ (4) LIST OF APPLICABLE "ROADWAY STANDARDS" COMPLETED
- _____ (5) LIST OF "GENERAL NOTES" COMPLETED
- _____ (6) RIGHT-OF-WAY REVISION NOTES REMOVED FROM THE PLANS
- _____ (7) T.I.P. NUMBER IS SHOWN ON ALL SHEETS
- _____ (8) COORDINATE FINAL PLANS TO ENSURE COMPLIANCE WITH PERMIT
- _____ (9) UTILITY ITEMS ARE INCLUDED
- _____ (10) LANDSCAPE AND EROSION CONTROL ITEMS ARE INCLUDED
- _____ (11) SIGNING AND SIGNALIZATION ITEMS ARE INCLUDED
- _____ (12) LIGHTING ITEMS ARE INCLUDED
- _____ (13) RIGHT-OF-WAY PLAN SHEET NUMBER SHOWN ON THE PLANS IN THE MARGIN ABOVE THE TITLE BLOCK (EXAMPLE R/W-102) (ONLY IF DIFFERENT SHEET NUMBERS)
- _____ (14) PLACE P.E. SEALS ON PLANS
- _____ (15) PROVIDE SHOULDER DRAIN LOCATIONS
- _____ (16) ARCHIVE COPY OF CADD FILE
- _____ (17) ON PROJECTS WITH 30 CROSS-SECTION SHEETS OR LESS, SUBMIT FULL-SIZE CROSS-SECTIONS. ON PROJECTS WITH 31

CROSS-SECTION SHEETS AND GREATER, SUBMIT LEDGER SIZE SHEETS.

- _____ (18) REINFORCED BRIDGE APPROACH FILLS ARE REQUIRED FOR EACH PROPOSED BRIDGE UNLESS THE FOUNDATION RECOMMENDATION STATES OTHERWISE.
- _____ (19) PROVIDE TYPICAL SECTIONS FOR SIGNING AND SEALING BY THE PAVEMENT MANAGEMENT UNIT
- _____ (20) ENSURE PLANS INCLUDE ANY "ENVIRONMENTAL COMMITMENTS".
- _____ (21) ALL SHEETS IN PLANS MUST BE 34" WIDE X 22" HIGH.
- _____ (22) DESIGN EXCEPTIONS ARE TO BE NOTED ON PLANS.
- _____ (23) INCLUDE PARCEL INDEX SHEET (FOR PROJECTS WITH 2 OR MORE PLAN SHEETS) AS THE LAST SHEET IN THE 3 SERIES OF SHEETS.
- _____ (24) PLACE "SURVEY CONTROL SHEETS" (APPLICABLE TO PROJECTS SENT TO R/W AFTER 03-01-2003) IN THE 1 SERIES OF SHEETS AFTER THE "CONVENTIONAL SYMBOLS" SHEET.
- _____ (25) PLACE "CENTERLINE COORDINATE LIST" IN NO. 1 SERIES SHEETS AFTER "SURVEY CONTROL SHEETS" (APPLICABLE TO NEW LOCATION PROJECTS).
- _____ (26) INCLUDE BRIDGE "FOUNDATION RECOMMENDATIONS"

SPECIAL PROVISIONS

- _____ (1) SPECIAL PROVISIONS WRITTEN FOR ITEMS AND CONTRACT IMPLEMENTATION ITEMS NOT COVERED BY THE CURRENT "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES", PROJECT SPECIAL PROVISIONS OR STANDARD SPECIAL PROVISIONS.